



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,624	11/04/2002	Edward Jobson	07589.0069.PCUS00	4218

28694 7590 10/11/2006
NOVAK DRUCE & QUIGG, LLP
1300 EYE STREET NW
400 EAST TOWER
WASHINGTON, DC 20005

EXAMINER

NGUYEN, TU MINH

ART UNIT	PAPER NUMBER
----------	--------------

3748

DATE MAILED: 10/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/065,624	Applicant(s) JOBSON ET AL.	
	Examiner Tu M. Nguyen	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-30 and 32-35 is/are rejected.
- 7) ☒ Claim(s) 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 November 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>20030114, 20030722</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. An Applicant's Response to an Election/Restriction requirement filed on August 14, 2006 has been entered. Claims 1, 2, 6, 8-10, 23, and 30 have been amended. Overall, claims 1-35 are pending in this application.

Election/Restriction

2. Applicant's election of the species of Figure 5 in the Applicant's Response is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 1-35 are said to be readable thereon and therefore, will be examined in their full merit.

Specification

3. The abstract of the disclosure is objected to because one line 5, "ahs" should read --has--. Correction is required. See MPEP § 608.01(b).

Claim Objections

4. Claims 8, 9, 22, 29, 31, and 33-35 are objected to because of the following informalities:

- Claim 8, line 4 of the claim, "the conduit" should read --a conduit--.
- Claim 9, line 1 of the claim, "the inlet" should read --an inlet--.

Art Unit: 3748

- Claim 22, this is a method claim; therefore, "separation" on line 4 should read --a step of separating--.

- Claim 29, line 1 of the claim, "return" should read --a step of returning--.

- Claim 31, line 3 of the claim, "detection" should read --a step of detecting--.

- Claim 33, line 1 of the claim, "a diagnosis" should read --a step of diagnosing--.

- Claim 34 is also a method claim; thus, "separation" on line 4 should read --the steps of separating--; and on line 6, "return" should read --returning--.

- Claim 35, "separation" on line 1 should read --the steps of separating--; and on line 4, "return" should read --returning--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 2-7, 15-20, 23-28, 32, and 33 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for supplying air to a separation unit to remove at least one of a first gas component and a second gas component (i.e., water and NO_x) from an exhaust gas for return to an engine, does not reasonably provide enablement for supplying a reducing agent to a separation unit to reduce a first gas component (i.e., NO_x) therein. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to utilize the invention commensurate in scope with these claims.

The support for the above rejection is as follows: each of the embodiments of Figure 4 and 5 includes a conduit (28b) as a carrier for air only from the surrounding atmosphere; wherein the air is supplied to the separation unit to remove at least one of water and NO_x from the exhaust gas (see paragraphs 0069 and 0078 of the specification). Furthermore, paragraph 0070 clearly states that the embodiment of Figure 4 does not utilize any supply of reducing agent. Only in the embodiment of Figure 1 shows a conduit (28a) in communication with a fuel tank (7) to supply a reducing agent to the separation unit.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Aine (U.S. Patent 3,903,694).

As illustrated in Figures 1 and 2, Aine discloses a separation unit (6) for reducing the amount of a gas component (unburned hydrocarbons, NO₂) in a gas flow, characterized in that it comprises a wall structure (12) which comprises material (lines 43-63 of column 4) which provides a selective passage of the gas component from the gas flow before other gas components in the gas flow.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1, 22, 29, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aine (U.S. Patent 3,903,694).

Re claims 1, 22, and 34, as shown in Figures 1-2, Aine discloses a device and a method for reducing the amount of a first gas component (NO₂) from a combustion engine (1), comprising feeding of the exhaust gas flow in an exhaust pipe (5) from the engine to a separation unit (6) arranged along the exhaust pipe (21), characterized in that it further comprises the steps of separating of a second gas component (unburned hydrocarbons) from the exhaust gas flow in a wall structure (12) comprising material (lines 43-63 of column 4) which provides a selective passage of the second gas component before other gas components (nitrogen, oxygen, CO) in the exhaust gas flow, and returning of the second gas component to the inlet (3) of the engine.

Aine, however, fails to specifically disclose that the engine is adapted for operation by a lean air/fuel mixture.

Aine discloses the claimed invention except for applying the invention to a lean air-fuel ratio burning engine. It would have been obvious to one having ordinary skill in the art at the

Art Unit: 3748

time the invention was made to apply the invention of Aine to a lean burning type engine, since the recitation of such amounts to an intended use statement. Note that all internal combustion engines that utilize a hydrocarbon compound as a fuel and air as a source of oxygen generate exhaust gases containing harmful emissions of HC, NO_x, soot, CO, etc, that require purification before the gases can be released to the atmosphere; and the mere selection of the purification system of Aine for use in a lean air-fuel ratio burning engine would be well within the level of ordinary skill in the art.

Re claims 29 and 35, the method of Aine is characterized in that it comprises the steps of separating of the first gas component (NO₂) and the second gas component (unburned hydrocarbons) in the wall structure (12), which comprises material which provides a selective passage of the first gas component and the second gas component before other gas components (nitrogen, oxygen, CO) in the exhaust gas flow, and returning of the first gas component and the second gas component to the inlet of the engine (1) via a conduit (18).

11. Claims 8-10 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aine as applied to claims 1 and 29, respectively, above, in view of Casey (U.S. Patent 5,661,973).

Re claims 8, 9, and 30, in the device and method of Aine, the separation unit (6) comprises an outlet connected with the inlet (3) of the engine via a conduit (18), for returning the first gas component to the inlet after separation from the exhaust gas flow; and an inlet connected with an additional conduit (7) for feeding in fresh air as carrier gas for the first gas component.

Aine, however, fails to disclose that the engine is provided in connection with a turbo-aggregate with an exhaust gas turbine and a compressor for compression of air which has been

Art Unit: 3748

fed into the engine, characterized in that an outlet conduit of the separation unit is connected to a point upstream of the compressor.

As shown in Figure 1, Casey discloses a fuel saving device for an internal combustion engine, comprising a separation unit (10) having a recovery chamber (22) for trapping residual fuel components in an exhaust gas stream and returning the components to the engine via an outlet conduit (29). As indicated on lines 39-50 of column 3, Casey teaches that it is conventional in the art to return the residual fuel components to a turbo-aggregate with an exhaust gas turbine and a compressor for compression of air that has been fed into the engine, wherein the outlet conduit of the separation unit is connected to a point upstream of the compressor. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Casey in the device and method of Aine, since the use thereof would have been routinely practiced by those with ordinary skill in the art to effectively remove harmful emissions in the exhaust gas stream.

Re claim 10, the modified device of Aine is characterized in that the first gas component (NO_2) is constituted by an oxide of nitrogen (NO_x compound) in the exhaust gas flow.

12. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Depalma (U.S. Patent 3,846,980).

Re claim 11, as depicted in Figures 1-2, DePalma discloses a device for reducing the amount of a first gas component (NO_x) from a combustion engine (1), comprising an exhaust pipe (3) for transport of the exhaust gas flow from the engine, characterized in that it comprises a separation unit (10) which is arranged along the exhaust pipe, which separation unit comprises a wall structure (12) of a material (lines 10-15 of column 4) which provides separation of a

Art Unit: 3748

second gas component (water) from the exhaust gas flow by means of a selective passage of the second gas component before other gas components in the exhaust gas flow, and that the separation unit comprises an outlet which is connected with the inlet of the engine (1) via a conduit (11), for return of the second gas component to the inlet after separation from the exhaust gas flow.

DePalma, however, fails to specifically disclose that the engine is adapted for operation by a lean air/fuel mixture.

DePalma discloses the claimed invention except for applying the invention to a lean air-fuel ratio burning engine. It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the invention of DePalma to a lean burning type engine, since the recitation of such amounts to an intended use statement. Note that all internal combustion engines that utilize a hydrocarbon compound as a fuel and air as a source of oxygen generate exhaust gases containing harmful emissions of HC, NO_x, soot, CO, etc, that require purification before the gases can be released to the atmosphere; and the mere selection of the purification system of DePalma for use in a lean air-fuel ratio burning engine would be well within the level of ordinary skill in the art.

Re claims 12-13, the device of DePalma is characterized in that the second gas component is constituted by water and the first gas component is constituted by an oxide of nitrogen (NO_x compound) in the exhaust gas flow.

Art Unit: 3748

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over DePalma as applied to claim 13 above, in view of Casey.

The device of DePalma discloses the invention as cited above, however, fails to disclose that the engine is provided in connection with a turbo-aggregate with an exhaust gas operated turbine and a compressor for compression of air which has been fed into the engine, characterized in that an outlet conduit of the separation unit is connected to a point upstream of the compressor.

As shown in Figure 1, Casey discloses a fuel saving device for an internal combustion engine, comprising a separation unit (10) having a recovery chamber (22) for trapping residual fuel components in an exhaust gas stream and returning the components to the engine via an outlet conduit (29). As indicated on lines 39-50 of column 3, Casey teaches that it is conventional in the art to return the residual fuel components to a turbo-aggregate with an exhaust gas turbine and a compressor for compression of air that has been fed into the engine, wherein the outlet conduit of the separation unit is connected to a point upstream of the compressor. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Casey in the device of DePalma, since the use thereof would have been routinely practiced by those with ordinary skill in the art to effectively remove harmful emissions in the exhaust gas stream.

Art Unit: 3748

Allowable Subject Matter

14. Claim 31 is objected to as being dependent upon a rejected base claim, but would be allowable if amend to overcome a claim objection outlined above and rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior Art

15. The IDS (PTO-1449) filed on January 14 and July 22, 2003 have been considered. An initialized copy of each is attached hereto.

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of six patents: Milgram (U.S. Patent 3,393,668), Templin et al. (U.S. Patent 3,645,098), Morin (U.S. Patent 3,831,377), Adamczyk et al. (U.S. Patent 5,375,414), Wirmark (U.S. Patent 6,122,908), and Abdul-Khalek (U.S. Patent 6,964,158) further disclose a state of the art.

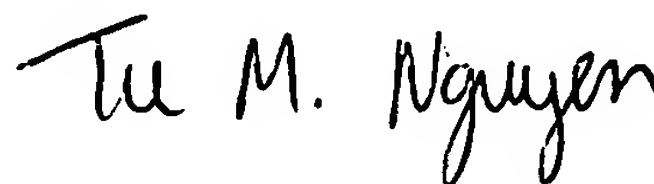
Art Unit: 3748

Communication

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TMN

Tu M. Nguyen

October 2, 2006

Primary Examiner

Art Unit 3748